

RV Mtafiti scientific strategy for sustainable research



Kenya Marine and Fisheries Research Institute.

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Outline of the scientific strategy

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2.0 Situation analysis

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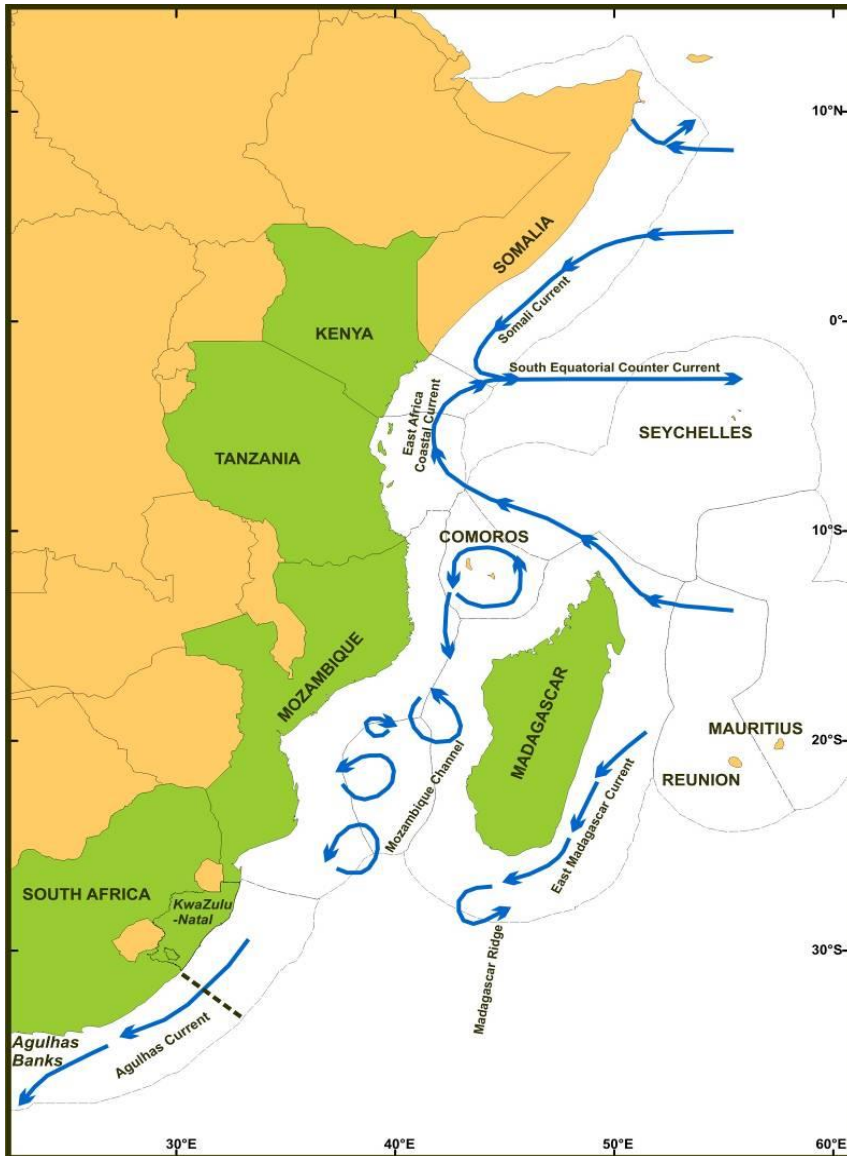
4.0 Procedure for provisioning of ship time for scientific work

5.0 Modification and equipping of RV Mtafiti

1. Introduction

- **Provides a link to the Second Medium Term Plan (MTP2) and the Kenya Vision 2030, the National Oceans and Fisheries Policy, 2008 (under review) and the KMFRI Strategic Plan 2010 – 15 (under review).**
- **KMFRI's Mandate (on fisheries, aquatic environment and resources, and aquaculture)**
- **Vision (Excellence in aquatic research, promoting sustainability).**
- **Mission (improved livelihoods).**
- **The Purpose of the Strategy: The need for a comprehensive scientific strategy for the development of marine research in Kenya is pegged on:
KMFRI's desire to transit from inshore marine research to offshore research for national and regional development.**
- **The Policy Context: The National Oceans and Fisheries Policy, 2008 – Research for food security and income generation through effective private, public and community Partnerships.**

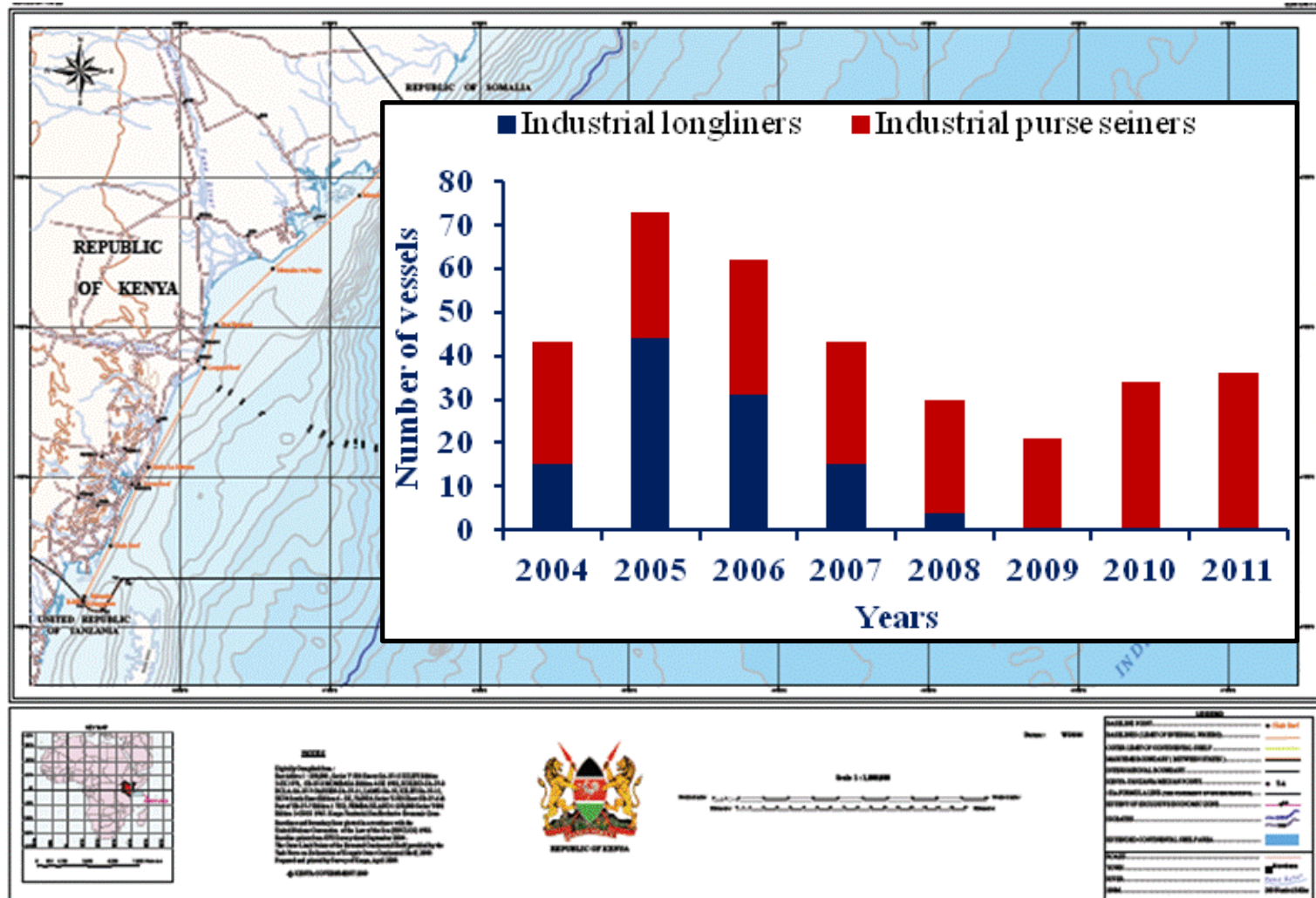
1. Introduction cont.



- Gives the potential of the territorial waters and the EEZ in terms of fisheries production 150 000 – 300 000 MT annually.
- Potential of USD 150 Million (KES 12 Billion) annually.
- Kenya's EEZ considered second most productive for tuna fishery after Somalia

2. Situational analysis

Cognizance of the marine zones: Internal waters, Territorial waters, Contiguous zone, Archipelagic waters and the Exclusive Economic Zone (EEZ) under the Geneva Convention and United Nations Convention on the Law of the Sea (UNCLOS)



2. RV Mtafiti Research Thematic area 1.

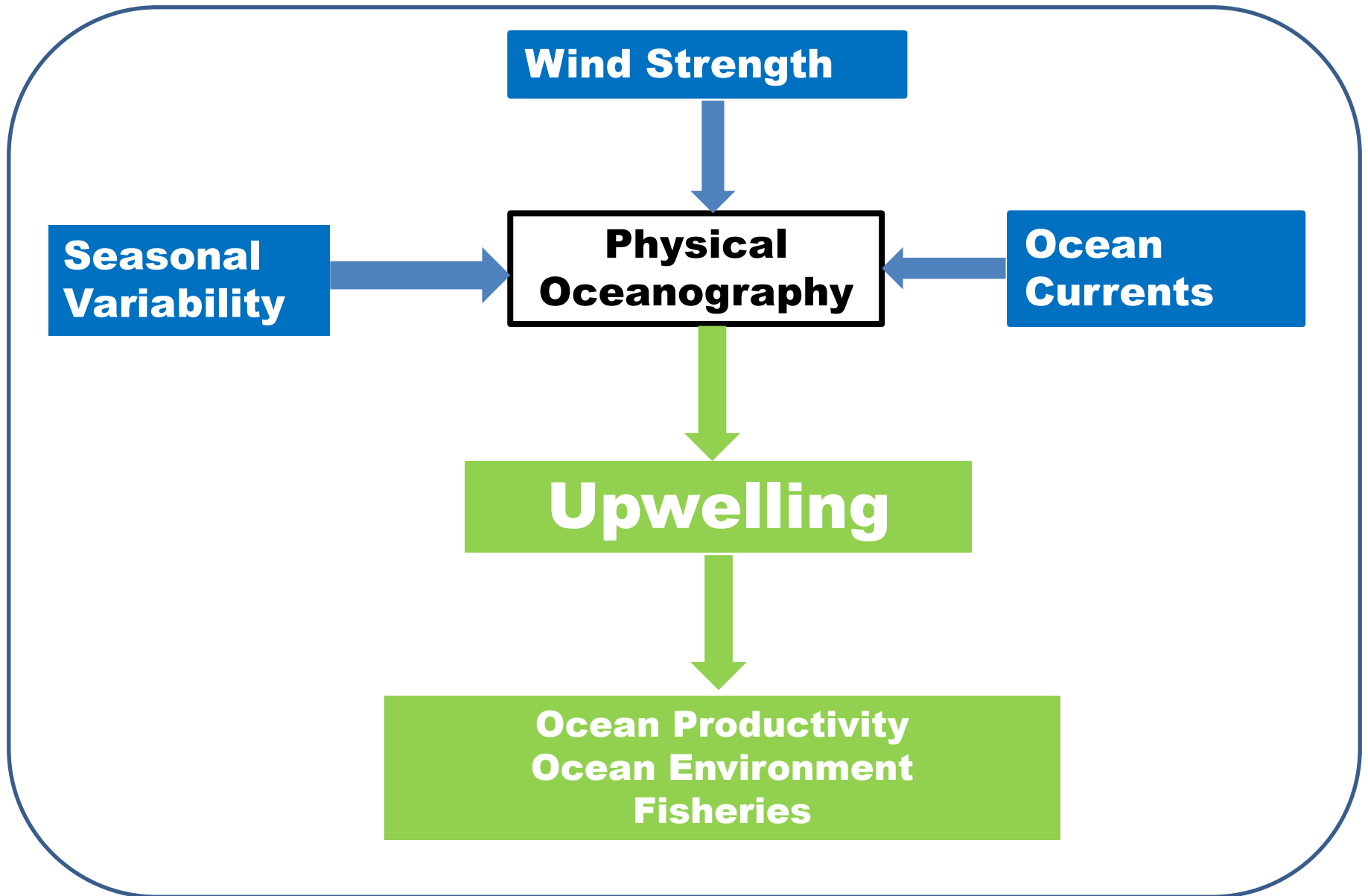
Fisheries

- **Importance of marine fisheries: Economic and food security.**
- **The need to carry out stock assessment for management and increased investment.**
- **Offshore fisheries in territorial waters and EEZ have not been studied – esp. the Straddling and migratory stocks.**
- **There is little offshore fisheries data in Kenya and the WIO region at large.**

2. RV Mtafiti Global Research Thematic area 2.

Chemical and Physical Oceanography

- **Vulnerability of the world oceans to anthropogenic sources of pollutants:**
 - **Upstream agriculture**
 - **Sea transport (port activities)**
 - **Domestic effluents/urbanization**
 - **Human encroachments of the coastal areas.**
 - **Industrialization**
 - **Role of winds and currents**
- **Emerging pollutants such as plastics are non-biodegradable**



Wind Strength

**Seasonal
Variability**

**Physical
Oceanography**

**Ocean
Currents**

Upwelling

**Ocean Productivity
Ocean Environment
Fisheries**

2. RV Mtafiti Research Thematic area 3.

Ocean Productivity

- **Ocean productivity is affected by nitrogen and the monsoons.**
- **Undertake qualitative and quantitative plankton and benthos surveys.**
- **Establish existing food chains / webs and energy transfer.**
- **Inshore marine areas have been relatively studied compared to the offshore waters.**

2. RV Mtafiti Research Thematic area 4.

Marine geology

- **Undertake marine geological mapping**
 - **Bed rock formations and Prospecting for Presence of harvestable minerals, oil, gas, etc.**
 - **Nature and distribution of sediments.**
 - **Production of bathymetric data and maps,**
 - **Marine habitat characterization**

2. Summarized RV Mtafiti Global Research Thematic areas.

Global Research Objective:
To enhance marine science while promoting sustainable economic development, food security and marine environmental health

Ocean Research on:
Ocean resources and key production features

Ocean Research on:
Ocean environmental health

Research themes

Objectives

Outcomes

Fisheries

- Stock assessment
- Migration patterns of commercial species
- Genetic interconnectivity
- Exploration of new and unfished stocks
- Determination of trophic levels
- Gear development and testing (tech)

- Stocks quantified and sustainably managed
- New fisheries developed
- Increased revenues

Environment

- Spatio-temporal distribution of heavy metals, persistent organic pollutants & hydrocarbons
- Microplastics levels
- Ocean acidity and sea temperature profiles
- Deep-water benthic studies
- Data validation for remote sensing products and Argo float data

- Assured product quality
- Increased access to global markets
- Climate change adaptation and amelioration
- Raised compliance level of MARPOL and other IMO conventions

Ocean productivity

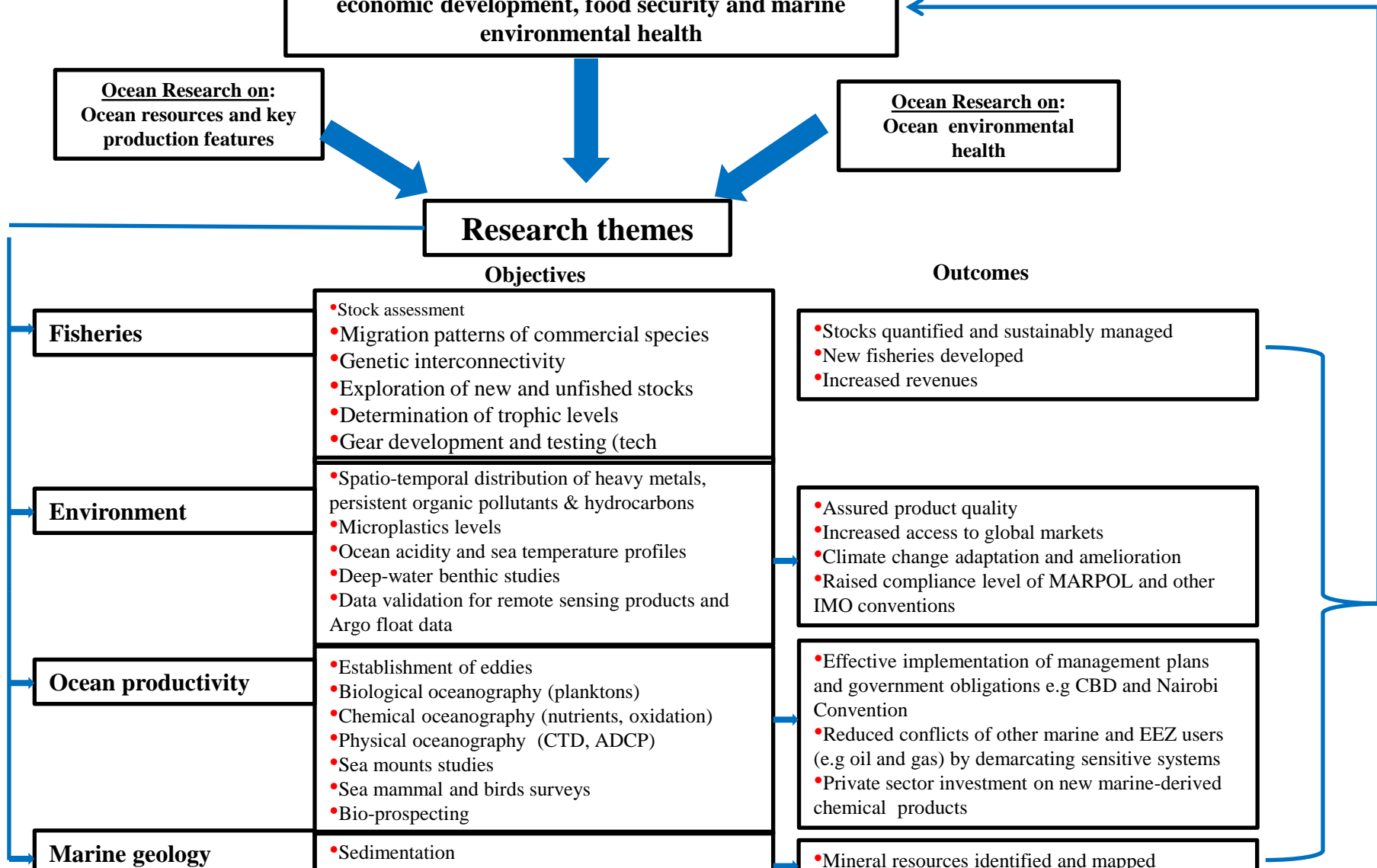
- Establishment of eddies
- Biological oceanography (planktons)
- Chemical oceanography (nutrients, oxidation)
- Physical oceanography (CTD, ADCP)
- Sea mounts studies
- Sea mammal and birds surveys
- Bio-prospecting

- Effective implementation of management plans and government obligations e.g CBD and Nairobi Convention
- Reduced conflicts of other marine and EEZ users (e.g oil and gas) by demarcating sensitive systems
- Private sector investment on new marine-derived chemical products

Marine geology

- Sedimentation
- Bathymetric surveys and Sea bottom mapping (thermovents)
- Seismology

- Mineral resources identified and mapped
- Sea bottom topography mapped



3. Proposed Road map for achieving the RV Mtafiti Research Objective

Details of RV Mtafiti and its operational cost:

- **Length Overall = 55.6 m**
- **Beam = 9.0 m**
- **Draught = 3.65 m**
- **Power = 1192 KW**
- **2 engines of 750.080 A**
- **Maximum speed = 14.5 knots**
- **Crew size = 47**
- **Cruising speed = 14knts**

For security: The vessel docks at the Kenya Navy Base, Mkunguni

Boarding and disembarking of scientists will be conducted at the Wanainchi Marine Products berth, Liwatoni.

5. Modification and equipping RV Mtafiti with appropriate working equipment (Long-term)

Pelagic fish surveys

- **Fit an echo-sounder for Acoustics – To estimate fish biomass and detect bottom rock formations.**
- **Rig for Long lines**

Demersal fish and crustacean surveys

- **Drop lines**
- **Bottom traps**
- **Benthopelagic fish surveys**
 - **Mid-water bottom seine nets**
 - **Ring nets**

What actions have we undertaken?

- **During SWIOFP:**
 - developed and installed FADs and developed procedures for Ring net and Drop-line fishing gears.
 - Established presence of large pelagic highly migrating fish stocks (Tuna and Tuna-like species).
- Submitted sailing orders and Budget to Government for consideration and release of funds.
- Planned first open day for RV Mtafiti on (dates).
- Planned first cruise off-shore to undertake:
 - Establish long-term sampling transects.
 - Conduct Surveillance of our territorial zone.
- Established RV Mtafiti Management Coordination Committee.

3. Proposed Road map for achieving the RV Mtafiti Global Objective

15 day Cruise Operational costs.(lower capacity)

No.	Item	Total/day	No. pacs	Cruise days	Q 1	Q 2	Q 3	Q4	TOTAL (KES)
1	Fuel	7,200 Ltrs		15	11,880,000	11,880,000	11,880,000	11,880,000	47,520,000
2	Docking fuel	400 Ltrs		300	-	-	-	-	13,200,000
3	Subsidiary fuel	420,000		15	-	-	-	-	420,000
4	Food	13,440	27	15	201,600	201,600	201,600	201,600	806,400
5	Ship consumables	50,000		15	50,000	50,000	50,000	50,000	200,000
6	Crew Salary	102,053	17	15	1,530,795	1,530,795	1,530,795	1,530,795	6,123,180
7	Allowances	216,000	27	15	3,240,000	3,240,000	3,240,000	3,240,000	12,960,000
8	Maintenance	92,370			8,313,288	8,313,288	8,313,288	8,313,288	33,253,151
9	Medical stores	16,700		15	250,500	250,500	250,500	250,500	1,002,000
10	Communication	45,800		15	45,800	45,800	45,800	45,800	183,200
11	Servicing	4,000,000			4,000,000	4,000,000	4,000,000	4,000,000	16,000,000
12	Deck stores								
	Cleaning materials	20,000		15	20,000	20,000	20,000	20,000	80,000
	Docking cleaning								160,000
	Ship's husbandry	30,000		15	30,000	30,000	30,000	30,000	120,000
	Docking husb								240,000
	Office stores	30,000		15	30,000	30,000	30,000	30,000	120,000
	Docking stores								240,000
	Fumigation	15,000		15	15,000	15,000	15,000	15,000	60,000
	Docking fum								120,000
	Ropes&seamanship	50,000		15	50,000	-	50,000	-	100,000
	TOTAL (KES)				29,656,983	29,606,983	29,656,983	29,606,983	132,907,931
13	Equipment installation								
	Air condition								20,000,000
	Internet								8,000,000
	Assorted scientific equipment								100,000,000
	TOTAL (KES)								128,000,000

3. Proposed Road map for archiving the RV Mtafiti Global Objective cont.

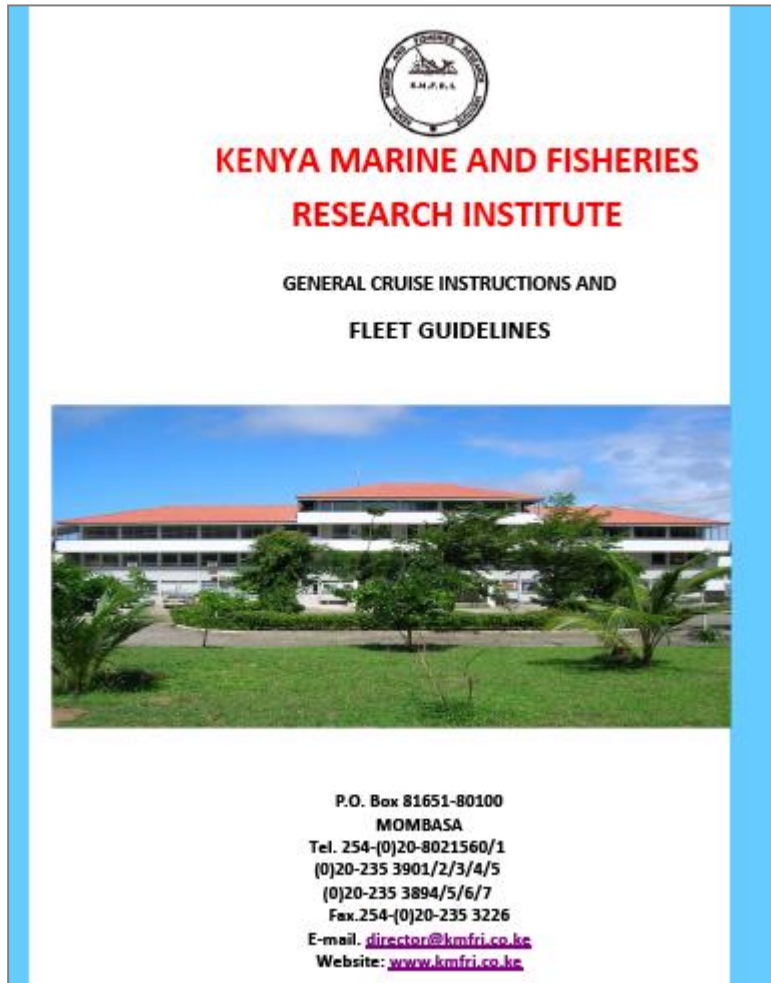
Collaborative Research, Capacity Building and Training in Marine Sciences.

- **Development of collaborative marine training modules with other national, regional and international institutions.**
- **Development and participation on collaborative research projects on the WIO proposal development and partnership collaborations; e.g.,**
 - **IOC-UNESCO Second International Indian Ocean Expedition (IIOE-2) Project – 1 year duration.**
 - **GEF UNDP SAPPHIRE Project – 5 year duration.**
- **Hold RV Mtafiti stakeholders' consultative meeting and Open Days to chart out common interests.**
- **Collaborative mapping of new fishing grounds with fishing companies.**

Why this presentation?

- **Past experiences.**
- **Need to open up.**
- **Need to share (KMFRI can only occupy the vessel max. 20 days X4 annually (Quarterly)). The rest of time available for other interests (training, surveillance, tourism, etc).**
- **Planning (jointly).**
- **Open invitation to plan and budget for use of Mtafiti.**
- **Provide SMART solutions for resource use and management.**

4. Procedure for provisioning of ship time for scientific work



Standard Operating Procedures (SOPs) of the ISO 9001:2008 quality management systems (KMF/QMS/OP/MC/01)

Thanks for listening

Any comments and/or inputs?